Health Advisory:

PERTUSSIS

December 10, 2004

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Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

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Health Advisory
December 10, 2004

FROM: **RICHARD C. DUNN**
DIRECTOR

SUBJECT: **Pertussis Alert**

The Missouri Department of Health and Senior Services alerts health care providers to a 355% increase in pertussis, as compared to the same period of time for the previous 5-year period, 1999-2003. The increase represents 370 reported pertussis cases for Missouri from January 1 to December 6, 2004. Missouri is following a national trend of more pertussis cases, with most increases in adolescents and adults. The upswing in the number of pertussis cases may be related to the recent availability of more sensitive testing methodology.

Pertussis is one of the few vaccine-preventable diseases that is still endemic in the U.S., and it is important for health care providers to be vigilant when diagnosing cough illnesses of more than two weeks' duration. Universal vaccination of children younger than seven years with the complete four- to five-dose series of DTaP is the best public health intervention for the prevention of pertussis. Newborns and infants should begin the DTaP series at six weeks to two months of age. For best protection, they should receive subsequent vaccinations as early as recommended.

Clinical Manifestations

Pertussis is highly communicable and can cause severe disease in very young children. It begins with mild upper respiratory tract symptoms and progresses to cough, and can further progress to severe paroxysms, often with a characteristic inspiratory whoop followed by vomiting. Fever is absent or minimal. Among older children and adults, the disease usually results in symptoms that can be mistaken for bronchitis and URI's – persistent cough, but no whoop. In infants younger than six months, apnea is a common manifestation and whoop may be absent.

It is important to remember that while pertussis is most often considered a young child's disease, it can occur at any age. Pertussis should be considered in older children and adults who have a persistent cough lasting more than 7-14 days, that cannot be attributed to another specific illness. Untreated, these older children and adults can act as a reservoir for pertussis disease and infect younger children.

Diagnostic Testing

Pertussis kits, with swabs and transport media, can be obtained from your local public health agency or the Missouri State Public Health Laboratory (573-751-0633).

Obtaining a positive culture result from a person with pertussis can be affected by several factors such as how the specimen is handled, the stage of illness at the time of specimen collection, the use of antimicrobial therapy prior to culture, immunity from past infection or from vaccination, and age of the case-patient. Several studies have shown that specimens obtained for culture within three weeks of cough onset had a higher proportion of culture-positive results compared with specimens taken later in the illness. In the absence of treatment, after six weeks of cough, the rate of culture-positivity was shown to be less than 20%. Lastly, plating of culture medium immediately and directly (i.e., without transport) after specimen collection increases yield.

Therefore, if a case-patient is symptomatic in absence of another cause and is a close contact of a lab confirmed pertussis case, the Missouri Department of Health and Senior Services does not recommend testing before treating the case-patient.

Since laboratory confirmation of pertussis may not always be achieved, clinicians may have to make their diagnosis on the basis of clinical characteristics, such as apnea (in infants), prolonged cough, inspiratory whoop, post-tussive vomiting or cyanosis, and an increased white blood cell count with absolute lymphocytosis.

Treatment

Until more data from clinical studies evaluating new macrolides become available, the Centers for Disease Control and Prevention (CDC) recommends erythromycin as the antimicrobial agent of choice for treatment of and prophylaxis against pertussis. The specific drug of choice for treating pertussis is erythromycin estolate (40–50 mg/kg per day, orally, in 4 divided doses; maximum 2 g/day), for a full 14 days.

However, the American Academy of Pediatrics states that studies have documented that the newer macrolides, clarithromycin (15-20 mg/kg/day, orally, in 2 divided doses; maximum 1 g/day for 7 days), or azithromycin dihydrate (10-12 mg/kg per day, orally, in 1 dose; maximum 500 mg/day, for 5 days) may be as effective as erythromycin and have fewer adverse effects and better compliance.

A possible alternative for patients who do not tolerate erythromycin is trimethoprim-sulfamethoxazole (TMP-SMZ). The recommended dosage for children is trimethoprim, 8 mg/kg/day, and sulfamethoxazole, 40 mg/kg/day, in 2 divided doses for 14 days. The recommended dosage for adults is trimethoprim, 320 mg/day, and sulfamethoxazole, 1600 mg/day, in 2 divided doses for 14 days.

Once into the paroxysmal stage, the drug will not ameliorate the disease but will limit the spread to others. The patient should be isolated for 5 days after the initiation of erythromycin.

Penicillins and first- and second-generation cephalosporins are not effective against *B. pertussis*. If appropriate antimicrobial therapy is contraindicated or patient refuses treatment, the patient should be isolated until 3 weeks after the onset of paroxysms.

Prophylaxis of Household and Other Close Contacts

Chemoprophylaxis is recommended for all household and other close contacts irrespective of age, whether contact has pertussis-like symptoms, or immunization status (since pertussis immunity is not absolute and may not prevent infection). Close contacts are defined as those persons having direct contact with respiratory, oral, or nasal secretions from a symptomatic case-patient, direct face-to-face contact, regardless of duration with a symptomatic case, or having shared a confined space in close proximity for a prolonged period of time with a symptomatic case. The antibiotics and dosages used for chemoprophylaxis of contacts are the same as those recommended for treatment of a clinical case. Clinical cases of pertussis as well as symptomatic contacts of cases should be isolated and stay home from work or school until a 5-day course of the prescribed antibiotic has been taken.

- Management of pertussis in schools and child-care facilities requires special attention to several issues.
    1. Identifying and evaluating cases.
        - Notify the local health department and school nurse immediately.
        - Collect a nasopharyngeal specimen for isolation of *B. pertussis.* Once a culture confirmed case of pertussis has been identified, there is no need to obtain specimens from other persons in the same group.
        - Begin treatment of the case.
    2. Identifying high-risk contacts and close contacts. (High-risk contacts are persons at risk for developing severe disease and adverse outcomes.)
    3. Chemoprophylaxis is recommended for all close contacts.
    4. Chemoprophylaxis for high-risk contacts (that are not close contacts) should be considered, and evaluated on case-by-case basis.
    5. Initiating active surveillance for pertussis in the child-care center, or school and continuing surveillance until six weeks after cough onset of the last confirmed or suspected case.
    6. Assessing the immunization status of students less than 7 years of age and referral for immunization as needed.

Immunization

Close contacts under the age of seven who are unimmunized or those who have received fewer than four doses of DTaP should have immunizations initiated or continued according to the recommended schedule. A fifth dose is recommended if the fourth dose is given before the age of four.

The best way to reduce the incidence of pertussis is to have a highly vaccinated population. This should be accomplished through physicians' offices and public health clinics. Five doses of DTaP at ages 2, 4, 6, 12-18 months and 4-6 years are recommended. Health care professionals should identify their clients less than 7 years of age who are inadequately immunized against pertussis and recall them for immediate DTaP immunization.

Reporting

Health care providers are also requested to assist in the control of pertussis through immediate reporting of suspect cases by telephone to your local public health agency or the Missouri Department of Health and Senior Services (800-392-0272).

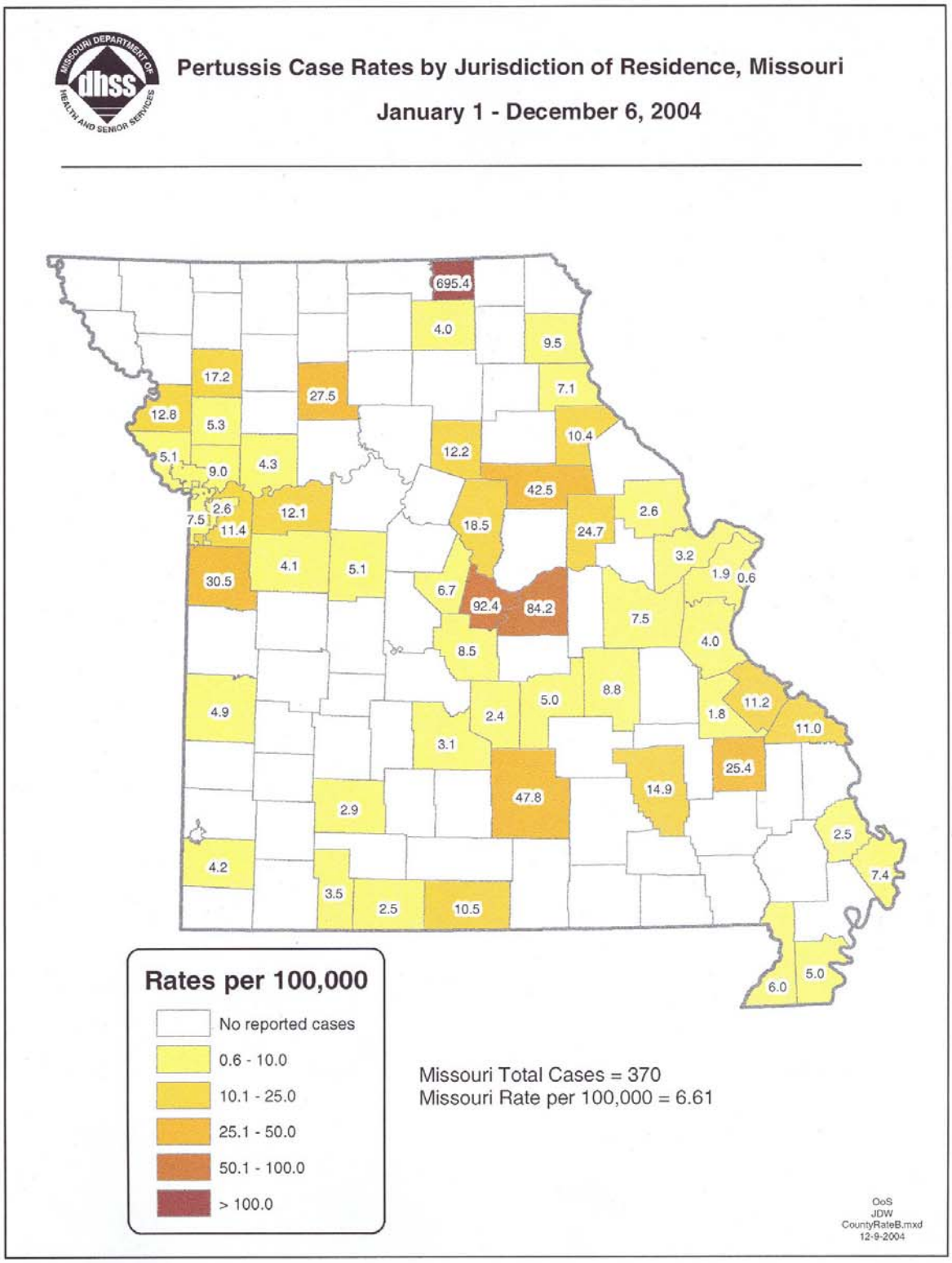
If you have questions, please contact the Department's Disease Investigation Unit at 573-751-6113, or 800-392-0272.

Additional Information

Attached to this Health Advisory is a "Pertussis Newsletter" showing Missouri specific information on cases and a map showing the incidence of pertussis per 100,000 for each of the counties in Missouri.

References:

1. Centers for Disease Control and Prevention. National Immunization Program. Guidelines for the Control of Pertussis Outbreaks. Atlanta, GA http://www.cdc.gov/nip/publications/pertussis/guide.htm
2. American Academy of Pediatrics. "Pertussis". In: Pickering, LK, ed. *Red Book: 2003 Report of the Committee on Infectious Diseases.* 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003: 472-486
3. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W, Hamborsky J, Wolfe S, eds. "Pertussis." 8th ed. Washington DC: Public Health Foundation, 2004, 75 – 88. http://www.cdc.gov/nip/publications/pink/default.htm
4. McNeil Byron K, and Guinto-Ocampo, Hazel."Pertussis". eMedicine August 16 2004, http://www.emedicine.com/ped/topic1778.htm

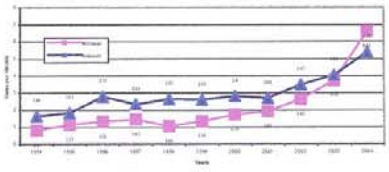

Pertussis Case Rates by Jurisdiction of Residence, Missouri
January 1 - December 6, 2004
695.4
4.0
9.5
17.2
27.5
7.1
12.8
5.3
10.4
12.2
5.1
9.0
4.3
42.5
2.6
7.5
11.4
12.1
18.5
24.7
2.6
4.1
5.1
3.2
1.9
0.6
30.5
6.7
92.4
84.2
7.5
4.0
8.5
4.9
2.4
5.0
8.8
11.2
1.8
11.0
3.1
25.4
47.8
14.9
2.9
2.5
4.2
7.4
3.5
2.5
10.5
6.0
5.0
Rates per 100,000
No reported cases
0.6 - 10.0
10.1 - 25.0
25.1 - 50.0
50.1 - 100.0
> 100.0
Missouri Total Cases = 370
Missouri Rate per 100,000 = 6.61
OoS
JDW
CountyRateB.mxd
12-9-2004

Reported Pertussis Cases per 100,000 Population, by Residence, Missouri, January 1—December 6, 2004

Jurisdiction	Number of Cases	Rate per 100,000
Adair	1	4.00
Audrain	11	42.55
Boone	25	18.46
Buchanan	11	12.79
Cass[1]	25	30.49
Clay[1]	9	9.00
Clinton	1	5.27
Cole	66	92.44
Crawford	2	8.77
DeKalb	2	17.25
Dunklin	2	6.03
Franklin	7	7.46
Greene	7	2.91
Jackson[2]	25	1.43
Jefferson	8	4.04
Johnson	2	4.14
Laclede	1	3.08
Lafayette	4	12.14
Lewis	1	9.53
Lincoln	1	2.57
Livingston	4	27.48
Madison	3	25.42
Marion	2	7.07
Miller	2	8.49
Mississippi	1	7.45
Moniteau	1	6.74
Montgomery	3	24.72
Newton	2	4.20
Osage	11	84.21
Ozark	1	10.48
Pemiscot	1	4.99
Perry	2	11.03
Pettis	2	5.08
Phelps	2	5.02
Platte[1]	2	5.11
Pulaski	1	2.43
Ralls	1	10.39
Randolph	3	12.16
Ray	1	4.28
Reynolds	1	14.95
Schuyler	29	695.44
Scott	1	2.47
St. Charles	9	3.17
St. Francois	1	1.80
St. Louis	19	1.87
Ste. Genevieve	2	11.21
Stone	1	3.49
Taney	1	2.52
Texas	11	47.82
Vernon	1	4.89
St. Louis City	2	0.57
Kansas City	33	7.47
Independence	3	2.65
Total for Missouri	**370**	**6.61**

1 excludes Kansas City
2 excludes Kansas City and Independence

Pertussis Rates of Reported Cases in Missouri versus National, 1994 - December 6, 2004



National data for 2003 and 2004 is provisional. Missouri data for 2004 is through December 6th and is provisional.

Classification of Pertussis Cases by Sex, by Race/Ethnicity, and by Age Groupings, Missouri January 1—December 6, 2004

SEX			
Male	159	43.0%	5.85
Female	205	55.4%	7.13
No Data	6	1.6%	N/A
RACE/ETHNICITY			
White	289	78.1%	6.00
Black	21	5.7%	3.20
Asian	2	0.5%	2.62
Hispanic/Latino	9	2.4%	7.59
No Data	49	13.2%	N/A
AGE GROUPS			
0-2 months[1]	40	10.8%	223.23
3-6 months[1]	32	8.6%	131.14
7-11 months[1]	12	3.2%	39.32
1-4 years	42	11.4%	14.14
5-7 years	26	7.0%	11.14
8-19 years	128	34.6%	12.92
20-39 years	50	13.5%	3.22
40+ years	38	10.3%	1.55
No Data	2	0.5%	N/A

1 Population size estimated from vital records data.

PERTUSSIS VACCINATION STATUS AMONG 78 CHILDREN AGED 6 MONTHS TO 6 YEARS REPORTED WITH PERTUSSIS IN MISSOURI, JANUARY 1 - DECEMBER 6, 2004

	6-11 months	1-4 year	5-6 years
No Doses	7	14	8
At least 1 Dose	1	1	4
3+ Doses	3	15	8
Unknown	3	12	2

Of the 370 case patients, 78 (21%) were aged 6 months to 6 years. Of the 78 cases in this age group, 61 (78%) had known vaccination status.

29 (37%) did not receive a vaccination (no doses).
6 (8%) received at least one dose.
26 (33%) received three or more doses.

Pertussis cases birth to 6 years of age, 34 cases were hospitalized.
Pertussiss cases ages 7 years and older, 5 cases were hospitalized.
No pertussis deaths have been reported as of December 6, 20004.

Data contained in this report is provisional.